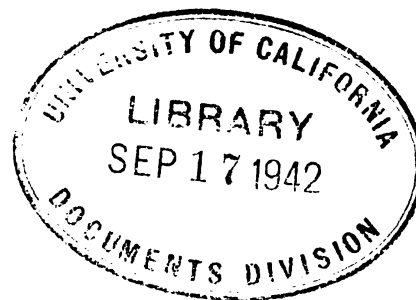
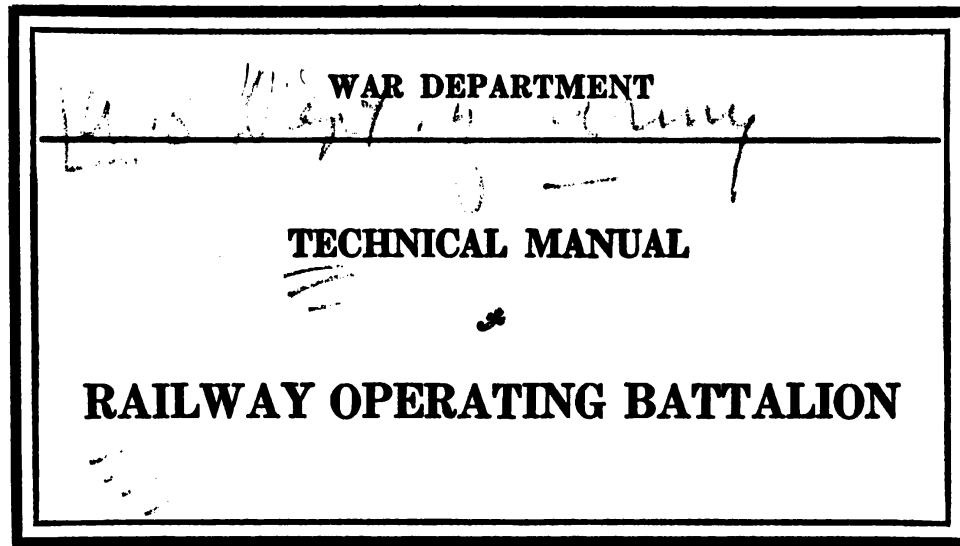


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TECHNICAL MANUAL

RAILWAY OPERATING BATTALION TM 5-405
1940

CHANGES
No. 1

WAR DEPARTMENT, ★
WASHINGTON, June 9, 1942. ★

TM 5-405, November 29, 1940, is changed as follows:

30. Function.

* * * * *

b. The number of trains which may be operated in 24 hours depends upon the length of the line, condition of track and equipment, number and location of passing tracks, nearness to front, etc. For the purpose of planning it may be assumed that the operating platoon has sufficient personnel to operate 20 trains (10 in each direction) in 24 hours. The company, therefore, can operate 40 trains in 24 hours (20 in each direction). This makes no provision for switching operations. Twenty-five train crews are provided in each operating platoon but the number of trains which can be operated normally must be reduced below 25 in order to permit periodic rest and to take care of sickness.

[A. G. 062.11 (5-13-42).] (C 1, June 9, 1942.)

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

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TECHNICAL MANUAL }
No. 5-405

WAR DEPARTMENT,
WASHINGTON, November 29, 1940.

RAILWAY OPERATING BATTALION

Prepared under Direction of the
Chief of Engineers

| SECTION | | Paragraph |
|--|---|-----------|
| I. General. | | |
| | Purpose and scope | 1 |
| | Mission | 2 |
| | Organization | 3 |
| | Cooperation | 4 |
| | Weapons | 5 |
| | Equipment | 6 |
| | Transportation | 7 |
| | Terminology | 8 |
| II. Technical operations. | | |
| | Powers and limitations | 9 |
| | Distribution of personnel | 10 |
| | Demolition | 11 |
| | Additional personnel | 12 |
| | Relation to other arms and services | 13 |
| | Command | 14 |
| III. Headquarters, and headquarters and service company. | | |
| | Organization | 15 |
| | Function | 16 |
| | Battalion headquarters | 17 |
| | Headquarters and service company | 18 |
| IV. Maintenance of way company. | | |
| | Organization | 19 |
| | Function | 20 |
| | Company headquarters | 21 |
| | Bridge and building maintenance platoon | 22 |
| | Track maintenance platoon | 23 |
| V. Maintenance of equipment company. | | |
| | Organization | 24 |
| | Function | 25 |
| | Company headquarters | 26 |
| | Car repair platoon | 27 |
| | Locomotive repair platoon | 28 |

*This manual supersedes TR 445-25, August 20, 1930.

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CORPS OF ENGINEERS

| | |
|--|------------------|
| VI. Transportation company. | Paragraph |
| Organization..... | 29 |
| Function..... | 30 |
| Company headquarters..... | 31 |
| Train operating platoon..... | 32 |
| VII. Drill and ceremonies. | |
| General..... | 33 |
| Battalion staff..... | 34 |
| Color guard and guidon..... | 35 |
| Rules relating to men armed with pistols.... | 36 |
| Drill organization..... | 37 |
| Close-order drill..... | 38 |
| Formations..... | 39 |
| Inspection..... | 40 |
| Ceremonies..... | 41 |
| Extended order..... | 42 |
| VIII. Combat. | |
| General..... | 43 |
| Squad..... | 44 |
| Platoon..... | 45 |
| Company..... | 46 |
| Battalion..... | 47 |
| Headquarters, and headquarters and service company..... | 48 |
| IX. Training. | |
| General..... | 49 |
| Private..... | 50 |
| Noncommissioned officer..... | 51 |
| Commissioned officer..... | 52 |
| Unit..... | 53 |
| Method..... | 54 |
| X. Medical detachment. | |
| General..... | 55 |
| Drill, ceremonies, and combat..... | 56 |

SECTION I

GENERAL

| | |
|------------------------|------------------|
| | Paragraph |
| Purpose and scope..... | 1 |
| Mission..... | 2 |
| Organization..... | 3 |

| | Paragraph |
|----------------------|-----------|
| Cooperation | 4 |
| Weapons | 5 |
| Equipment | 6 |
| Transportation | 7 |
| Terminology | 8 |

1. Purpose and scope.—*a.* This manual explains the organization and operation of the war strength railway operating battalion for employment upon a standard military railway. Its purpose is to assist engineer railway officers in training and operation of their units and to guide command and staff officers charged with their employment. No attempt is made to prescribe employment of railway operating battalions under all situations. The scheme for organization and employment described is drawn up to fit the general requirements of railway troops operating railway divisions.

b. Since actual conditions which may confront a railway operating battalion vary widely, it is not intended that a literal interpretation of these provisions be made. They should be considered as a guide and exceptions made thereto in the interest of efficient operation. Ultimate responsibility for efficiency of a railway operating battalion rests upon the battalion commander (division superintendent), who must work out details as to the employment of railway troops as the situation demands.

c. The statement of duties is only for the purpose of showing command relations between various individuals, and command responsibility. Rules and regulations governing movement of trains and safety of trains and personnel cannot be prescribed until the theater of operations and the physical characteristics of the railroad are known.

d. The word "division" as used herein refers to a railway division and not to a tactical division.

2. Mission.—*a.* The mission of a railway operating battalion is to operate and maintain a division of a standard military railway in the theater of operations. It may be required by higher authority to destroy the line over which it is operating.

b. The principal objective for railway troops taking over a new line is immediate movement of supplies and replacements to the front and evacuation therefrom.

3. Organization.—*a.* The railway operating battalion is the basic railway unit. It is normally assigned to a railway division in the communications zone or to a regulating station. For command relations, see paragraph 14.

b. The battalion is so organized that it is capable of taking over the railway activities of the smallest self-contained railway zone, called in civil practice the railway division, which includes the mainline tracks, sidings, terminals, shops, and structures required for coordinated action.

c. A railway operating battalion is divided into a headquarters, headquarters and service company, medical detachment, transportation company, maintenance of way company, and maintenance of equipment company (see T/O 5-125, 5-126, 5-127, 5-128, and 5-129). The transportation company is the basic unit of the battalion. The other companies assist the transportation company in furnishing uninterrupted train service.

4. Cooperation.—Cooperation is essential not only between the various elements of the railway operating battalion but also between the battalion and the military service in general and the battalion and coordinating agencies. Prompt service, the guiding principle of railway operation, depends upon teamwork. In order to insure team play within the battalion, the battalion commander is placed in direct command of all railway personnel employed on his railway division.

5. Weapons.—Basic arms of companies of the battalion are—

- a.** Headquarters and service company, rifle.
- b.** Transportation company, pistol or revolver.
- c.** Maintenance of way company, rifle.
- d.** Maintenance of equipment company, rifle.

6. Equipment.—**a.** The battalion is equipped with organizational equipment and supplies for the office of battalion headquarters and for messing, routine supply, and administration; and with motor transportation for reconnaissance, supervision, messenger service, and routine battalion supply. Its technical equipment includes drafting and reproduction, and special railway tools, machinery, equipment, and supplies issued as required for initial operation and maintenance of a railway division. When a battalion is assigned a definite task it may requisition such additional equipment as the situation requires. Movement of the battalion is by rail. Its special railway equipment does not accompany a railway operating battalion when moved except under extraordinary circumstances, in which case it is moved by rail the same as any other special railway equipment.

b. Cars and locomotives.—Railway cars for operations are not assigned to any railway operating battalion or railway grand division, but are moved freely over the entire system as required. Locomotives are normally assigned to a railway grand division for use on the entire grand division.

7. Transportation.—*a.* Movements of railway operating battalions are by rail, and it is anticipated that their organizational equipment will always be carried in railway cars.

b. Tables of Basic Allowances show the authorized allowance of motor transportation. Sufficient motor vehicles are provided to permit the supply of units to provide contact with higher authority and depots within the railway division and for technical operation of the units.

8. Terminology.—The relation between positions of officers of railway operating battalions and those of officials of commercial railway systems is given below:

| Company | Designation | |
|---|---|---|
| | Military | Civilian |
| Headquarters, and headquarters and service. | Battalion commander.... | Division superintendent. |
| | Second in command..... | Assistant division superintendent. |
| | Supply officer..... | Division storekeeper. |
| | Adjutant..... | Assistant to superintendent. |
| Transportation..... | Commander, train movement section. | Chief dispatcher. |
| | Commander, signal maintenance section. | Signal supervisor or signal engineer. |
| | Company commander.... | Trainmaster. |
| | Platoon commander.... | Traveling engineer or road foreman of engines. |
| Maintenance of way.... | Second lieutenant..... | Yardmaster. |
| | Company commander.... | Engineer, maintenance of way, or division engineer. |
| | Commander, bridge and building platoon. | Supervisor, bridges and buildings. |
| | Commander, track maintenance platoon. | Roadmaster or track supervisor. |
| Maintenance of equipment. | Second lieutenant..... | Assistant engineer, maintenance of way. |
| | Company commander.... | Master mechanic. |
| | Commander, locomotive repair platoon. | Engine house or roundhouse foreman. |
| | Commander, car repair platoon. | Car builder. |
| | First lieutenant..... | Mechanical engineer. |

SECTION II

TECHNICAL OPERATIONS

| | Paragraph |
|--|-----------|
| Powers and limitations..... | 9 |
| Distribution of personnel..... | 10 |
| Demolition..... | 11 |
| Additional personnel..... | 12 |
| Relation to other arms and services..... | 13 |
| Command..... | 14 |

9. Powers and limitations.—*a.* The battalion employed on a railway division is capable of maintaining the normal supply of one field army over a single track standard gage line.

b. Length of a railway division to which a battalion is assigned is determined by higher authority. It depends upon the military situation, terrain, condition of roadbed and track, ruling grade, terminal facilities, nearness to the front, etc. In general, it may be stated that length of a railway division will vary from 50 to 120 miles. If daylight operation of railways adjacent to the front is prohibited, the length of the division may be less than 50 miles.

c. The railway operating battalion has the necessary personnel to maintain and operate a 50-mile single track railway division in advance of the regulating station. In a stabilized sector in rear of the regulating station, the battalion is capable of maintaining and operating a 75-mile division without an increase in personnel. Length of the division can be increased to about 120 miles by attaching auxiliary units to the maintenance of way company.

d. Initial construction of railways as distinguished from maintenance is not the duty of engineer railway battalions. Such work is normally done by general service regiments assisted when necessary by separate battalions or civilians.

e. Use of railway operating battalions for work other than maintenance or operation of railways should be avoided. When an unavoidable situation requires their employment on other work they must be provided with suitable transportation and equipment.

10. Distribution of personnel.—*a.* The railway division when operating in advance of the regulating station is normally divided into ten sections of approximately 5 miles each, and when operating in rear of regulating station or in an area which is not subjected to severe conditions such as frequent bombardments, poor roadbed, etc., ten sections of approximately $7\frac{1}{2}$ miles or more each. A longer division may be maintained by extending the length of the sections if conditions of track and traffic permit or by adding track maintenance sec-

tions to the maintenance of way company. General organization of a railway division in the theater of operations is shown below:

Operating division, theater of operations

| Terminal | Station | Station | Station | Station | Terminal |
|----------------------|------------------|----------------------|------------------|------------------|----------------------|
| A ^{1 2 3 4} | B ^{1 2} | C ^{1 2 3 4} | D ^{1 2} | E ^{1 2} | F ^{1 2 3 4} |

¹ Kitchen for signalmen and trackmen.

² Kitchen for train crews (continuous service).

³ Water tanks.

⁴ Fuel supply.

b. It is impracticable to prescribe any fixed distribution of personnel of the railway operating battalion due to the varying conditions under which it operates. The ideal distribution given as a guide only is—

(1) *Terminal A*.—Battalion headquarters and all other personnel not stationed at other locations. Battalion headquarters and shops normally are located at the principal terminal of the railway division.

(2) *Station B*.

1 sergeant in charge of track maintenance section (maintenance of way company).

2 corporals, section foreman (maintenance of way company).

14 section hands (maintenance of way company).

3 telegraph operators (headquarters and service company).

1 cook (headquarters and service company).

—
21 total personnel.

(3) *Station C*.—Same as station B with the addition of 2 cooks; total personnel, 23.

(4) *Station D*.—Same as station B.

(5) *Station E*.—Same as station B.

(6) *Terminal F*.—Personnel at this terminal depend upon the situation. If it is at the end of the line, it will require the same personnel as station C plus such inspectors and emergency repairmen as may be required. Normally it will not exceed 50 men. When the battalion is an intermediate one the activities at terminal F will be performed by the adjacent battalion.

(7) Detachments at stations B, C, D, and E are each under the command of a sergeant, section foreman, from the maintenance of way company. He is responsible for that part of the railroad maintenance work allotted to him, usually from 10 to 15 miles. He is responsible for administration, sanitation, discipline, and mess, and will exercise command in case it is necessary to engage in combat. However, he

has no control over technical activities of men who are not assigned to the maintenance of way company.

c. Distribution of technical troops being often insufficient to meet needs of certain specific tasks, economy of personnel must be practiced in railway operations. It may be necessary to modify temporarily certain units by reinforcing them with elements from others. Such measures should be exceptional, since personnel of each company should be kept under orders of its commander in the interest of efficient administration. When it is necessary to increase strength of one unit at the expense of another, subordinate elements under their leaders should be detailed whenever practicable instead of individuals.

11. Demolition.—*a.* Railway operating battalions may be required by higher authority to destroy railway structures and track. The commander of a railway operating battalion prepares plans for destruction of that part of the line over which he has control. The plan will include details concerning structures to be destroyed and their priorities, computations as to quantities of explosives required for complete demolition, and requisitions for material and supplies (FM 5-5).

b. Railway operating battalions are responsible for prompt withdrawal of rolling stock to prevent confiscation by the enemy. Conditions may arise which make it necessary to risk the possibility of losing rolling stock in order to accomplish an important mission worthy of such risk. In such cases railway personnel cooperate in every way possible with the commanders concerned.

12. Additional personnel.—*a.* Additional personnel may be placed at the disposition of railway operating battalions for the purpose of increasing the capacity of the railway. Such personnel may be—

- (1) Civilians.
- (2) Engineer troops.
- (3) Troops of other arms and services when engineer troops are not available (FM 5-5).

b. Civilians or troop units are assigned to the various departments of the railway in accordance with their needs. Civilians are attached to railway units and serve under the officers and noncommissioned officers of these units. Troops are employed under their own leaders supervised by the appropriate officer of the railway service.

c. The principal source of additional personnel is the engineer separate battalion. It will seldom be necessary to attach more than one company of the separate battalion to a railway operating battalion. A section of a separate battalion is capable of taking over track main-

tenance of 20 miles of single line or 15 miles of double line; a platoon, 60 miles of single line or 45 miles of double line. In a large terminal an entire company may be used on track maintenance within the terminal.

13. Relation to other arms and services.—*a.* The Corps of Engineers arranges with the Signal Corps for the necessary wire circuits for train dispatching and administration of military railways. Such circuits are operated by the Corps of Engineers. Construction and maintenance of these circuits are functions of the Signal Corps. Where a wire system is entirely turned over for administration of military railways, it is maintained and operated by the railway operating battalion.

b. Transportation officers of the Quartermaster Corps are administrative agents placed at important shipping and receiving points for the purpose of making requisitions on shipping agencies for transportation of men, animals, and materials, and for supervision of loading and unloading. They have no control over operation of trains nor over personnel of the railway services. Movement priorities, when necessary, are determined by higher authority; requisitions for rolling stock are made by transportation officers, and movements are executed by railway operating personnel.

c. No officer not a part of the railway operating organizations will give any orders to railway operating personnel in the discharge of their duties, or interfere in any way with operation of trains except in case of emergency.

d. (1) Train and engine crews for railway artillery trains passing over a railway division manned by an engineer railway operating battalion usually are furnished by the transportation company of the railway operating battalion. When train and engine crews are furnished by the railway artillery, pilots are provided by the transportation company of the railway operating battalion over whose trackage the movement is made. On trackage assigned to railway artillery, all train and engineer duties are performed by railway artillery troops or attached personnel. Locomotives for railway artillery trains may be furnished by the unit itself or by the railway operating battalion.

(2) Railway artillery trains or engines will not enter upon or foul tracks under Military Railway Service control without permission of the railway authorities. Military Railway Service trains and engines will not enter upon or foul tracks assigned to railway artillery except under authority of the latter.

(3) Military railway personnel maintain all main track cross-overs and turn-outs leading to railway artillery tracks. Railway artillery

troops maintain their own firing and approach tracks from and including the first standard rail joint outside fouling distance from the main track.

e. The railway operating battalion controls all movements over the trackage assigned to it. This includes schedules, routing, dispatching, and conduct of transportation.

f. Such running and major repairs to rolling stock of other arms as may be necessary are performed by engineer railway personnel (TM 5-410).

g. When a railway operating battalion operates a division between a regulating station and forward railheads, the division superintendent's office normally is located at the regulating station. If more than one battalion is required, a general superintendent's office may be located at the regulating station. The regulating officer determines shipment priorities and the engineer railway personnel carry out these priorities.

h. Railways are protected by combat troops located in the zone of operation of the railway. Where a line is subjected to frequent raids, it may be protected by armored trains manned and commanded by personnel from other arms and operated by railway operating battalion train crews. Movements of armored trains over a railway are special, are governed by tactical considerations, and their priority is specified by higher authority.

14. Command (fig. 1).—*a.* The service of military railways in the theatre of operations is under control of the commanding general, communications zone, through the engineer, communications zone, and the manager, Military Railway Service. Traffic control on military railways in forward areas is under control of regulating officers through a general superintendent or superintendent. Engineer headquarters, railway (see T/O 5-302) provides the manager, Military Railway Service, with a staff of four departments corresponding to the principal branches of railroad transportation. It includes an operations department, a maintenance of equipment department, a maintenance of way department, and a stores department. Engineer headquarters, railway grand division (see T/O 5-602) provides the general superintendent with a staff of six sections: administrative, transportation, water treatment, engineering, equipment, and stores. Chiefs of these sections coordinate actions of all subordinate units with reference to those duties which correspond to their respective staff sections. No section of this staff controls the operation of any unit as such, but each section handles the matters which pertain to it regardless of the unit in which the subject originates. The manager, Military Railway Service, has



FIGURE 1.—Organization of military railways and inland waterways, theater of operations.

under his direction one or more general superintendents, each in charge of a grand division (see FM 5-5, TM 5-400, and fig. 2).

b. Each general superintendent is in charge of two or more railway operating battalions, each operating a railway division.

c. Railway shops (see T/O 5-145) are retained directly under the manager, Military Railway Service, or assigned to a grand division as the manager, Military Railway Service, may direct. None is assigned to a grand division operating under control of regulating officers (see TM 5-410).

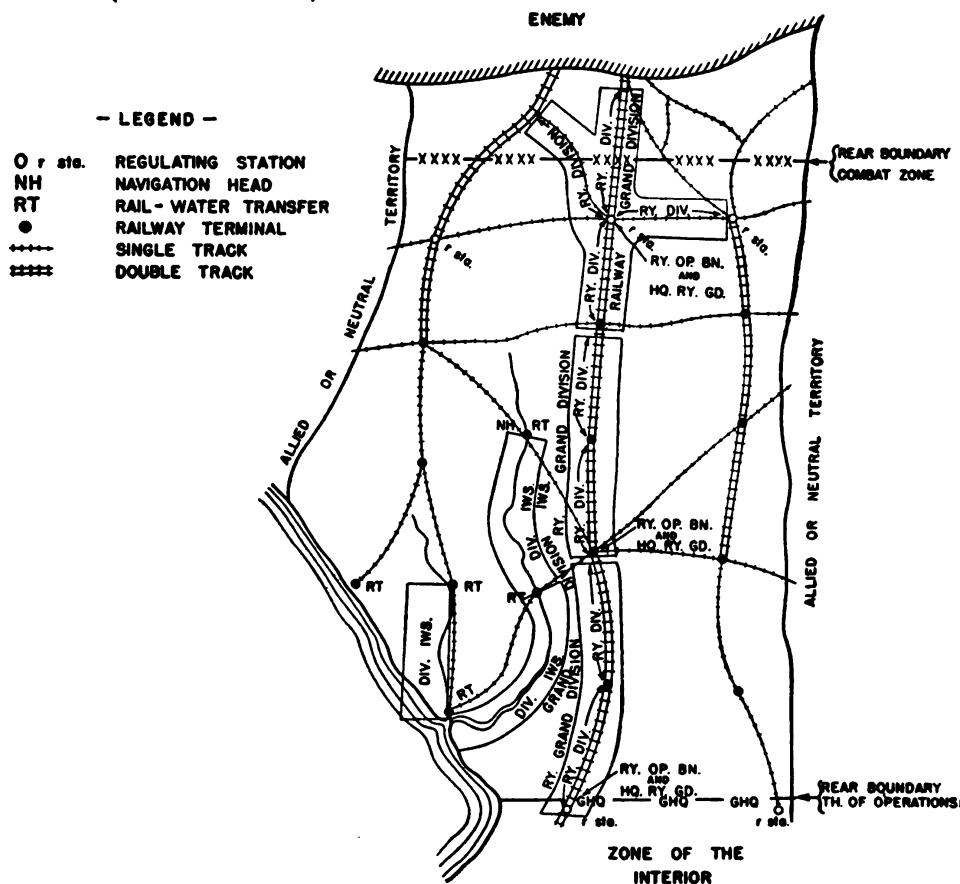


FIGURE 2.—Typical theater of operations showing military railways and inland waterways.

d. Although railway organizations have no control over new construction performed by general engineer troops within their areas, railway organizations will cooperate with construction troops in planning and execution of their work.

e. During a campaign, railway operations are usually of an extremely urgent character. Consequently in cases where it is impossible to adhere closely to the proper chain of command and communication without entailing dangerous delays, the battalion

commander authorizes company or detachment commanders to enter into direct communication with the various higher authorities in order to expedite fulfillment of their missions.

SECTION III

HEADQUARTERS, AND HEADQUARTERS AND SERVICE COMPANY

| | Paragraph |
|---------------------------------------|-----------|
| Organization..... | 15 |
| Function | 16 |
| Battalion headquarters..... | 17 |
| Headquarters and service company..... | 18 |

15. Organization (fig. 3).—*a.* Battalion headquarters consists of the battalion commander and his staff.

b. Headquarters and service company consists of company headquarters and six sections; administration, technical, supply and transportation, mess, train movement, and signal maintenance (see T/O 5-126).

16. Function.—The function of the headquarters and headquarters and service company is to provide technical, administrative, and supply personnel necessary to enable the battalion commander to supervise and coordinate activities of the battalion and to operate certain activities common to all companies such as signal communications.

17. Battalion headquarters.—*a.* The lieutenant colonel commanding the battalion is the division superintendent of the railway division assigned to his battalion. He is responsible for training, discipline, messing, housing, and morale of his troops. He supervises preparation of demolition plans for his division and executes such plans if directed by proper military authority. He makes such reports and keeps such records as may be necessary to insure efficient handling of rolling stock and personnel, and as may be required by higher authority. He should be prepared to make recommendations for increasing capacity of his division. When located in the forward area, he should by reconnaissance keep himself informed of conditions which will confront the battalion in case railheads of his division are moved forward. He exercises control through his company commanders.

b. Assistant division superintendent, major, is the executive officer on railway matters.

c. Battalion adjutant, captain, is in direct charge of operation of the administration section of the headquarters and service company.

He is responsible for military administration of the battalion and handles matters relating to personnel, battalion orders, records, police, guard, mail service, and message service. He advises the battalion commander on all matters relating to military training and military employment of the battalion.

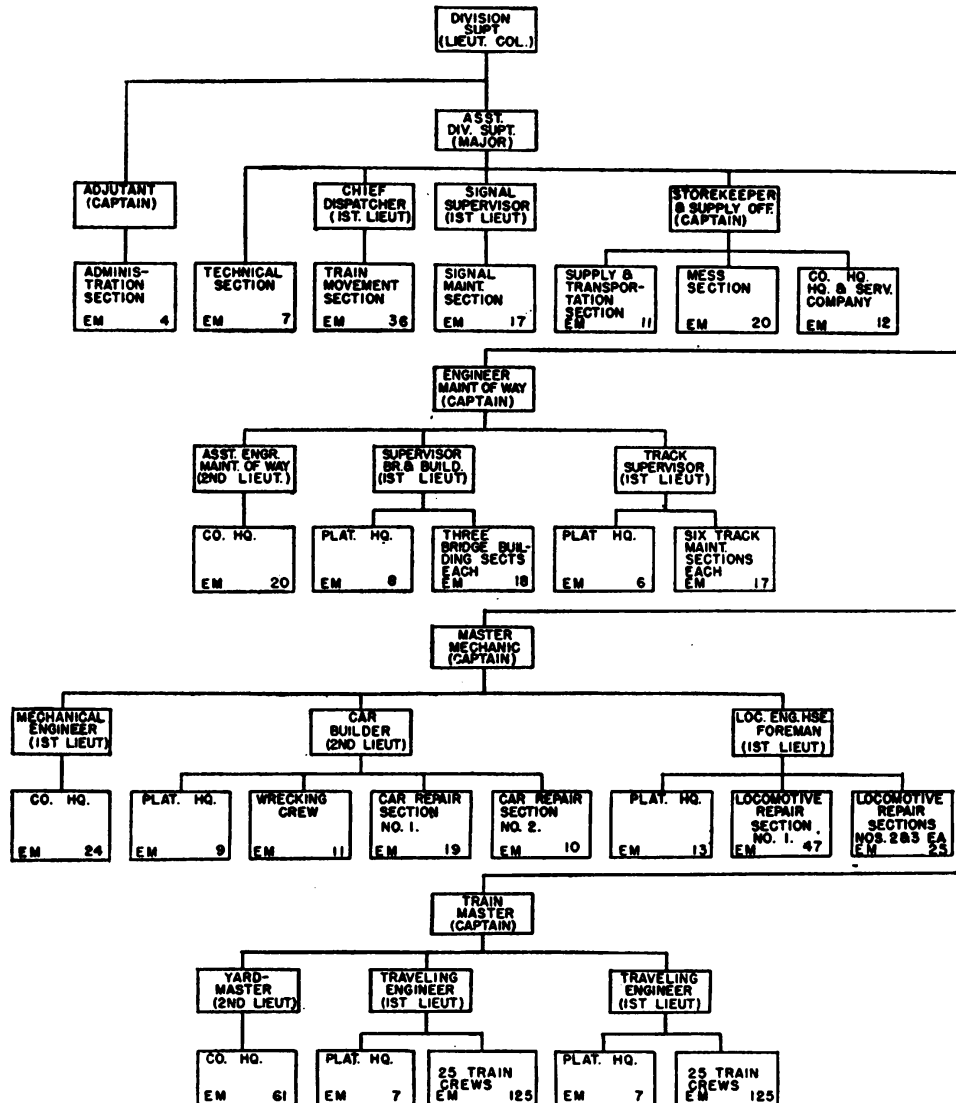


FIGURE 3.—Command relations, railway operating battalion.

18. Headquarters and service company.—*a. Company headquarters.*—(1) A captain commands the company. He is battalion supply officer, division storekeeper, fuel agent, and division mess officer. As supply officer he maintains the supply of food, clothing, ammunition, and equipment. As division storekeeper he coordinates the technical supply requirements of the railway division. He passes

upon requisitions submitted by companies of the battalion, supervises checking of incoming supplies and stores, makes issues, and maintains a depot if the situation requires it. He renders such reports and keeps such records as may be required by higher authority or in the interest of efficient operation.

(2) First sergeant is in charge of company administration and may be assigned additional duty. The company clerk is his clerical assistant.

(3) *Sergeants.*—(a) Mess sergeant is in charge of receipt, preparation, and distribution of rations of the company. He maintains the company mess and the mess for battalion officers. He has the cooks and helpers under his direction. Additional cooks may be attached from the mess section when the situation warrants it.

(b) Supply sergeant is in charge of receipt, care, and issue of company supplies. He keeps himself informed of supply requirements of various sections of the company and prepares and forwards requisitions.

(4) Company clerk, corporal, performs the clerical work of the company and keeps the records.

(5) *Privates.*—Cooks and helpers operate company mess under mess sergeant. Bugler is company messenger and reports to first sergeant. Basic privates may be used wherever their services are required. The orderlies are assigned as needed.

b. *Administration section.*—This unit reports to the battalion adjutant. The battalion sergeant major acts as chief clerk for the adjutant. He has under his direction routine battalion administration, pay rolls, morning reports, records, and mail. He has as his assistants a personnel sergeant, a corporal, clerk, and a private. When directed by the battalion commander, all company clerks report to the adjutant for duty in his office in connection with company records of their companies.

c. *Technical section.*—This unit reports to the division superintendent or his assistant. It takes care of technical administration, drafting, and photography for the battalion.

(1) *Master sergeants.*—(a) Chief clerk to division superintendent has charge of railway office management, supervises rendition of reports on railway operations, and keeps records and collects data relating to the railway. He is assisted by one corporal clerk.

(b) Wreck master is responsible for removal of wrecks, operation of wrecking crew on wrecking work, and condition of wrecking equipment. In case of a wreck he proceeds at once to site of the wreck and supervises its removal. He reports directly to the battalion com-

mander or his assistant, as directed. He assists in preparation of demolition plans, is custodian of the plan after it is approved, recommends changes therein, and participates in execution of the plan to the extent authorized by the battalion commander. When not engaged with the foregoing duties, he reports to the commander, car-repair platoon, maintenance of way company, as his assistant.

(2) Technical sergeant is in charge of design, drafting, and photography. He is assisted by one private draftsman, one private photographer, and one basic private. He may be employed on any special work or attached to other companies of the battalion for temporary duty.

(3) Corporal, clerk, assists the chief clerk.

(4) Privates, photographer, draftsman, and basic assist the technical sergeant in charge of the drafting room.

d. Supply and transportation section.—This unit provides clerical personnel for division storekeeper's office and personnel for operation of motor vehicles of the headquarters and service company. The unit is charged with receipt, distribution, and storage of supplies for the battalion. It reports to the battalion supply officer and works under his direct supervision. All battalion shoe repairing is performed by this section with assistance of men detailed from companies when necessary.

(1) Technical sergeant is the principal assistant of the supply officer. He dispatches motor vehicles and keeps battalion stores.

(2) Corporals, clerk and motor, assist the battalion supply sergeant.

(3) *Privates.*—Chauffeurs, motorcyclist, automobile mechanic, storekeeper, and basic.

e. Mess section.—This unit operates messes along the line where men from more than one company may mess. Reports to battalion supply officer.

(1) Sergeant is in charge of the mess section. He distributes rations and inspects battalion messes.

(2) Corporals, mess, supervise operation of messes. They are responsible for condition of messes assigned to them by section sergeant.

(3) Privates, cooks and helpers, are assigned to mess corporals for operation of messes. Basic are assigned as needed.

f. Train movement section.—This unit reports to the division superintendent or his assistant. It is responsible for movement of trains, coordination of clocks and watches, distribution of cars and motive power, and maintenance of car, locomotive, and movement records.

(1) First lieutenant, chief dispatcher, reports to division superintendent or his assistant. He is responsible for train movements, train orders, prompt movement of traffic, coordination of watches and time with higher authority and within the division, dispatch and distribution of motive power so as to be in a position to move all traffic offered in a prompt and efficient manner. He supervises car ordering and movement of empty equipment over his division; prompt loading and unloading of cars, and disposition of surplus equipment; supervises work of dispatchers and sees that they are handling trains safely and expeditiously. He sees that dispatchers and operators issue and copy train orders in correct manner, and investigates train delays on the road. He keeps a record of all cars set off at nonagency stations when in bad order or otherwise, and arranges for prompt repairs, unloading or loading, as the case may be. He reports immediately any violation of rules by train crews to the superintendent or trainmaster. He notifies the various division department heads of any materials consigned and being moved to them, also point and time at which consignment will be set so they may arrange for unloading. He sees that all fuel stations are amply supplied with fuel and that sufficient quantity is kept en route. He keeps himself informed of conditions of facilities such as water columns, signals, fuel stations, etc., and calls proper officer's attention to failures. He dispatches trains on a priority basis as directed by the superintendent. He maintains a record of train movements. He sees that proper authority is advised as to cars wanted and car surplus on territory under his supervision (see TM 5-415).

- (2) Master sergeant, principal assistant to the chief dispatcher.
- (3) Technical sergeants, train dispatchers, one for each shift.
- (4) Staff sergeant, car distributor.
- (5) Sergeant, reserve train dispatcher for special duty.
- (6) Corporals, telegraph operator and towerman.
- (7) Privates, telegraphers, telephone operators, and basic employed at various stations along the line.

g. Signal maintenance section.—This unit reports to the division superintendent or his assistant. It is responsible for maintenance of communications of the railway division and for operation of switchboards. Its duties include repair of telephones, telegraphs, and other signal instruments and maintenance of signal lines.

(1) First lieutenant, signal supervisor in charge of section, may also be battalion mess officer. He supervises all signal maintenance

and repairs and cooperates with the Signal Corps on technical matters.

(2) Staff sergeant, wire chief, telephone and telegraph.

(3) Corporals, lineman who directs maintenance of wires and circuits, and signal maintainer who directs repairs to signal instruments.

(4) Privates, carpenter, linemen, signal maintainers, installer repairmen, and basic.

SECTION IV

MAINTENANCE OF WAY COMPANY

| | Paragraph |
|--|-----------|
| Organization----- | 19 |
| Function----- | 20 |
| Company headquarters----- | 21 |
| Bridge and building maintenance platoon----- | 22 |
| Track maintenance platoon----- | 23 |

19. Organization (fig. 3).—Maintenance of way company is composed of company headquarters, bridge and building maintenance platoon, and track maintenance platoon (see T/O 5-127).

20. Function.—*a.* Conditions frequently prevailing in the theater of operations make the task of the maintenance of way company very difficult. Rapid deterioration of the roadbed and track under heavy traffic and bombardment, and damage to other structures by the latter place a severe burden on this company. Since personnel of this company are scattered over every mile of the railway division, authority must be delegated to subordinates and constant supervision exercised by officers of the company in order to insure efficient maintenance.

b. Maintenance of way includes repair and upkeep of track, switches, bridges, culverts, water lines, water tanks, buildings; in fact, all railway property maintenance and repair of which are not expressly delegated to other agencies. The maintenance of way company maintains signal, telegraph, and telephone lines when directed to do so by higher authority. When the maintenance of way company is charged with maintenance and repair of signal lines, the signal maintenance section of the headquarters and service company is attached to it for duty.

c. The maintenance of way company gradually improves condition of the track as opportunity offers, and installs such additional facilities of a minor nature as may be found advisable for the purpose of improving train operation. Structures require almost constant and rigid inspection to prevent failure and possible accidents to trains.

d. An active enemy equipped with long-range guns and bombardment airplanes can be expected frequently to damage the roadbed and structures. Repairs must be accomplished rapidly and effectively. The maintenance of way company must have sufficient troops at its disposal to take care of emergency work of this character without seriously interfering with normal maintenance. Additional personnel may be provided from other companies of the battalion or by higher authority (FM 5-5).

e. The track maintenance platoon operates the water service.

21. Company headquarters.—This headquarters has necessary personnel to take care of normal administration and supply of the company, coordination of maintenance activities, and operation of certain specialties common to the two platoons.

a. Captain, company commander, is the engineer, maintenance of way, and is directly responsible to the division superintendent. He supervises maintenance of track, roadbed, bridges, buildings, fences, and other structures, and the water supply; makes frequent inspections to see that his organization is securing proper standard of maintenance; approves and checks before forwarding all requisitions for material; and is responsible that sufficient emergency stock is maintained on the division. He is also responsible for military administration of his company and for rendition of military and railway reports. His territorial limits are the same as those of the division superintendent.

b. Second lieutenant, assistant to the engineer, maintenance of way, normally handles administration and supply matters under direction of the company commander. He may be delegated such other duties as the situation requires.

c. First sergeant has immediate charge of all routine matters of the company. He prepares or supervises preparation of routine reports, keeps organization records, prepares and issues orders, and performs such other work as may be assigned him.

d. Sergeants.—(1) Mess sergeant is in charge of receipt, preparation, and distribution of rations of the company. He has the cooks and helpers under his direction. He makes detailed arrangements for messing the track maintenance section with a mess section of the headquarters and service company when they operate at a distance from the company mess. He sees that plans are made for messing bridge and building crews when they are separated from the company mess by providing mess facilities or by arranging for their food with some other mess.

(2) Supply sergeant is in charge of receipt and issue of maintenance of way supplies of the battalion and individual and organizational supplies of the company. He maintains such stocks of materials as the situation may demand. He keeps in touch with supply requirements of the platoons and prepares and forwards requisitions. He is assisted by storekeepers and chauffeurs.

e. Corporals.—(1) Company clerk is charged with care and preparation of records of the company and reports to first sergeant.

(2) Surveyor is charged with all technical work of the company relating to lines and grades and inspections connected therewith. He operates the company drafting room. He has a railroad draftsman as an assistant. When it is necessary to make surveys additional men are detailed from company headquarters or the platoons. The surveyor normally reports to the company commander. With his assistant, he may be attached to bridge and building maintenance platoon or track maintenance platoon.

f. Privates.—Bugler, chauffeurs, draftsman, cooks and helpers, storekeepers, orderly, and basic. Bugler is company messenger and reports to first sergeant. Basic privates are engaged on such tasks as may be designated by first sergeant. The orderly is assigned as needed. Chauffeurs and storekeepers report to supply sergeant. Draftsman handles maps, drafting, reproduction, and photography, and reports to corporal surveyor. Cooks and helpers report to mess sergeant.

22. Bridge and building maintenance platoon.—This unit consists of platoon headquarters and three bridge and building sections. The platoon normally is charged with all railway maintenance other than rolling stock, motor vehicles, shop machinery, roadbed, and signal lines. The principal duties of the platoon are maintenance of bridges and buildings, and of coaling and watering facilities. The three bridge and building sections may be employed at various places along the line or on a three-shift basis for a given job.

a. Platoon headquarters.—This headquarters coordinates and inspects activities of the bridge and building sections, and furnishes technical and crane service for the platoon.

(1) First lieutenant, platoon commander and supervisor of bridges and buildings, reports to the engineer, maintenance of way, to whom he is responsible for safety and adequacy of structures. He supervises work of his platoon and furnishes it with proper materials and tools. He is responsible for maintenance of emergency supplies of bridge material to replace structures washed out, burned out, or destroyed. He aids the roadmaster, if necessary, in opening the line for traffic after damage. He supervises maintenance of

water stations, coal stations, and stationary boilers in stations and buildings except shops. He is responsible for messing and care of his men.

(2) Staff sergeant is supervisor of tanks, pumps, and water service. He is assisted by a mechanic and basic privates if necessary. He determines quality of water by simple tests, quantity available, and recommends such changes as may be in the interest of more efficient service. He keeps in touch with the officer in higher headquarters charged with railway water activities. He maintains water installations in cooperation with bridge and building sections.

(3) Sergeant is bridge inspector and reports to platoon commander. He is assisted by crane hoist and shovel operators, rigger, and basic privates if necessary. He keeps all bridge records, makes recommendations for bridge repairs, prepares requisitions for bridge materials, prepares bridge reports, and keeps informed of location of bridge materials, their kind and quantity. He keeps technical records of other structures assigned to the bridge and building maintenance platoon for upkeep.

(4) *Privates.*—General mechanic is charged with maintenance of pumps and water lines and reports to supervisor of water service. Crane hoist and shovel operators and rigger report to bridge inspector. Basic privates perform duties as directed.

b. Bridge and building section.—This section is organized and equipped to maintain structures and to build new structures within its capacity. It maintains signal lines only when directed by the battalion commander.

(1) Staff sergeant, construction foreman in charge of the section, supervises work of the section and is responsible for discipline and care of his men. He sees that there are no delays due to lack of materials. When section is separated from company mess he sees that arrangements are made for messing.

(2) Sergeant, bridge carpenter, second in command, is an expert bridge constructor.

(3) Corporal, general carpenter, is a group leader and expert building constructor.

(4) Privates are assigned to group leaders or special jobs by section leader. Included in section are blacksmiths, carpenters, and carpenter helpers, pipe fitter, stone mason, painter, structural steel workers, and basic.

23. Track maintenance platoon.—This unit is composed of a platoon headquarters and six track maintenance sections of two squads each. It is responsible for the safe condition and proper main-

tenance of roadbed, track, tunnels, right-of-way, station grounds, driveways, crossings, fences, cattle guards, track signs, etc., within the railway divisional area.

a. Platoon headquarters.—This headquarters supervises activities of the track maintenance sections and distributes tools and materials, prepares and forwards requisitions, and routine inspection reports.

(1) First lieutenant, platoon commander, is roadmaster or track supervisor and reports to and receives instructions from the engineer, maintenance of way. He assigns territorial limits to track maintenance sections and prescribes their duties. He examines track maintenance sergeants and corporals to see that they understand rules, timetables, and orders. He holds track maintenance sergeants responsible for discipline and training of men of their sections and for railway property within their territories. He is responsible for advance ordering of sufficient track materials to insure rapid repairs, and for surplus materials on his territory. In case of train accident, line obstruction, or damage, he proceeds at once to the site with forces, tools, and materials at his command. He clears the track and makes temporary repairs to permit passage of trains. Permanent repairs are made as soon as conditions permit. He takes charge of all trackmen who report for duty. He is responsible for care and messing of his men and defense of the line unless this defense is delegated to other troops.

(2) Staff sergeant, second in command, is section foreman, and handles such matters as may be delegated to him by the platoon commander. He normally supervises training and operation of personnel of the platoon.

(3) Sergeant, office assistant of platoon commander, normally handles matters relating to administration and supply. The storekeepers assist him in performance of his duties.

(4) Corporal, storekeeper, prepares requisitions, maintains distribution of materials, keeps records, and performs other supply functions.

(5) Private, storekeeper, keeps platoon records and files, and performs other routine clerical duties. Basic privates are assigned as needed.

b. Track maintenance section.—This section consists of a section foreman and two track maintenance squads. It is a maintenance unit assigned to a prescribed territory by the platoon commander. It is responsible for all maintenance work within territorial limits of the section unless expressly delegated to other units.

(1) Sergeant, section foreman, is responsible for discipline and training of his men and supervises their work. He normally has ad-

ministrative and disciplinary control of all personnel assigned to permanent duty within his area. He is responsible for defense of his area. He has no technical control of men not assigned to his section. He commands track maintenance personnel through corporals in charge of track maintenance squads. He is responsible for all track maintenance tools and materials within his area.

(2) Each track maintenance squad is composed of—

(a) Corporal performs technical duties performed by a section foreman on civil railways which includes inspection of tracks, road-bed, and right-of-way of the territory allocated to him. He goes over rail lines of his area or sends a reliable trackwalker with suitable tools at least once a day to make thorough inspection and see that track, highway crossings, bridges, culverts, fences, signals, telegraph lines, etc., are in safe condition. He is responsible for discipline and training of his men, for tools and materials assigned to him by the section sergeant, and for timely requests for additional tools and supplies.

(b) Privates, section hands.

SECTION V

MAINTENANCE OF EQUIPMENT COMPANY

| | Paragraph |
|--------------------------------|-----------|
| Organization | 24 |
| Function | 25 |
| Company headquarters..... | 26 |
| Car repair platoon..... | 27 |
| Locomotive repair platoon..... | 28 |

24. Organization (fig. 3).—Maintenance of equipment company is composed of company headquarters, car repair platoon, and locomotive repair platoon (see T/O 5-128).

25. Function.—This company is responsible for running repairs of rolling stock, tools, and mechanical appliances, inspection and conditioning of rolling stock, and maintenance and operation of fuel and lubrication facilities. Its duties are equivalent to those of a roundhouse force on a civil railway. Heavy repairs, general overhauling, and major replacements are performed in back shops operated by a railway shop battalion or civilian personnel. The maintenance of equipment company—

- a. Makes running repairs, tests, and inspections of rolling stock.
- b. Washes boilers.
- c. Repairs all tools and mechanical equipment of companies of the battalion.

- d.* Does all sign painting for the battalion.
- e.* Establishes and maintains a fuel reserve for the battalion.
- f.* Establishes and maintains gasoline, oil, kerosene, and grease reserve for the battalion.
- g.* Operates fueling and ash facilities.

26. Company headquarters.—Supervises technical operations of the two platoons, administers the company, procures, stores, and issues tools and materials for which the company is responsible, and operates drafting room.

a. Captain, company commander and master mechanic, is responsible to the division superintendent. He assigns personnel to jobs, and maintains an adequate supply of materials. He is responsible that personnel under his direction cooperate with other departments in their effort to facilitate operation of trains. He prescribes rules and regulations for protection of shops against fire and makes frequent inspections to see that they are complied with. He is responsible for protection of the shops and will make such provision therefor as the situation may demand.

b. First lieutenant, second in command and mechanical engineer, assists the master mechanic in performance of his duties and has direct charge of the drafting room and procurement, issue, and storage of tools, materials, and supplies. Personnel under his personal direction are sergeant storekeeper, supply sergeant, mechanical draftsman, chauffeurs, and storekeepers.

c. First sergeant, chief shop clerk, is responsible for preparation and rendition of administrative reports of a military or technical nature. He keeps all records. He is assisted by the corporal clerk (for more detail, see par. 21).

d. Sergeants.—(1) Supply sergeant is in charge of procurement, receipt, and distribution of all supplies except railway supplies, including rations, individual equipment, and organizational equipment other than engineer.

(2) Storekeeper sergeant is in charge of procurement, receipt, storage, and distribution of railway supplies, materials, and tools including engineer organizational equipment. He is normally assisted by storekeeper privates.

(3) Mess sergeant operates the company mess. He is assisted by cooks and helpers, and such other men as may be detailed to him. The cook assigned to wrecking train operates under the mess sergeant except when the wrecking train is away from company headquarters. The mess sergeant is responsible that wrecking train is provided with rations when it is operating away from the shop. He is also responsi-

ble for storage of rations on wrecking train to permit its movement to site of wreck without delay at any time during day or night.

e. Corporals.—(1) Company clerk prepares and cares for records of the company and reports to first sergeant.

(2) Mechanical draftsman is in charge of drafting room. He performs all drafting, photographic, and reproduction work for the company. He reports to the mechanical engineer on all technical matters.

f. Privates.—Cooks and helpers report to mess sergeant; chauffeurs report to supply sergeant; bugler reports to first sergeant; and storekeepers to sergeant storekeeper. Basic are employed on various tasks. The orderly is assigned as needed.

27. Car repair platoon.—This platoon is composed of headquarters, wrecking crew, and two car repair sections. It is charged with maintenance, repair, and inspection of cars, operation of wrecking train, and execution of all sign painting. Car repair section No. 1 is larger than car repair section No. 2. The former normally runs the day shift, and the latter the night shift. They may be combined and both work during the day if in the interest of more efficient operation.

a. Platoon headquarters.—Supervises operation of the car repair shop and inspects all cars passing over the division.

(1) Second lieutenant, platoon commander, under supervision of the master mechanic has direct charge of the car repair shop. He is responsible for discipline and training of his men and their suitability for work to which assigned and for inspection and tests of air brakes and air equipment in addition to repair of cars. He has direct supervision of car inspection and of supply of car repair materials.

(2) Staff sergeant, platoon sergeant and second in command, is the foreman in charge of the car shop. He coordinates work of car repair and requisitions shop materials.

(3) Corporals have charge of car inspection and report to lieutenant in command or to the platoon sergeant. Each corporal has one private car inspector assistant.

(4) *Privates.*—Storekeeper keeps platoon records and performs such other work as may be required by platoon commander or platoon sergeant. Car inspectors assist corporals. Basic are assigned as needed.

b. Wrecking crew.—Operates equipment assigned to wrecking train and supervises removal of wrecks or other line obstructions. It works under direction of the wreckmaster in technical section of headquarters and service company while engaged upon wrecking activities.

When wrecking crew is not employed upon removal of wrecks personnel thereof is attached to one or both car repair sections. The crane operator, fireman, and sergeant wreckmaster care for wrecking equipment under direction of wrecking foreman of headquarters and service company in connection with their other duties. Any additional men required for wrecking operations will be drawn from the car repair platoon.

(1) *Sergeants.*—(a) Wreckmaster is responsible for equipment and materials of wrecking train and for employment of wrecking crew when engaged upon wrecking activities.

(b) Car shop foreman assists wreckmaster. When wrecks cannot be removed in one working period, the car foreman alternates with the sergeant wreckmaster in directing wrecking crew personnel.

(2) *Privates.*—Fireman, mechanic, crane hoist operator, car mechanics, welder, basic. Designations indicate their duties. When these men are not engaged upon wrecking activities they are assigned to other duties as indicated above.

c. *Car repair section No. 1.*—Performs all car repairing and maintenance work during day shift, assisted by personnel from wrecking crew when assigned to it. It is responsible for all sign painting for the battalion.

(1) Sergeant, car shop foreman, is in charge of car repair shop during the time his shift is on duty. He is responsible for discipline and training of his men and supervises their work. He keeps the platoon sergeant informed of material requirements of the shop.

(2) Privates, blacksmith, blacksmith's helper, carpenters, air brake mechanic, pipe fitter, sign painter, general painter, car mechanics, welder, and basic. Their employment depends upon tasks assigned to car repair section.

d. *Car repair section No. 2.*—Performs emergency car repair work during the night shift. It is combined with car repair section No. 1 when it is expedient to do all repair work during the day.

(1) Sergeant, car shop foreman, is section leader and in charge of night shift.

(2) Privates, blacksmith, blacksmith's helper, carpenter, air brake mechanic, car mechanics, and basic.

28. Locomotive repair platoon.—This platoon is composed of headquarters and three locomotive repair sections. The platoon is charged with maintenance of locomotives and mechanical appliances, operation of locomotive cranes used for fuel and ash handling, and washing out of boilers. It is organized to permit operation of running repair shop on a three-shift basis. It may be organized to operate on a one- or two-shift basis if directed by master mechanic.

a. Platoon headquarters.—Supervises operation of running repair shop, inspects locomotives, and handles administrative matters in connection with activities of the platoon.

(1) First lieutenant, engine house foreman, commands the platoon and has charge of the shop train or engine house and other terminal facilities for handling power. He supervises dispatch of engines and sees that all engines arriving at their terminals are properly inspected, equipped, and in condition when ordered for service. He prescribes safety rules and regulations and by frequent inspections sees that they are complied with. He sees that there are no avoidable shop delays due to lack of material or tools.

(2) Technical sergeant, assistant engine house foreman, is the administrative assistant of the general shop foreman and is responsible for engine dispatching. He is assisted by a corporal clerk and a storekeeper private in performance of these duties. He is also charged with inspection of engines on their arrival at terminals and on their departure for service. In performance of the latter duty he is assisted by sergeants, air brake mechanic and boiler inspector, and corporals and privates, locomotive inspectors.

(3) Sergeant, power plant operator, is charged with supervision of electrical repairs to rolling stock and to electrical installations, including power for shop trains or running repair shop. He reports to the platoon commander. He is assisted by a corporal electrician.

(4) *Corporals.*—(a) Locomotive inspectors inspect incoming and outgoing engines. Each is assisted by one assistant inspector of engines (private). Sufficient inspectors are provided for 24-hour inspection service at the terminal with one inspector and his assistant on each shift.

(b) Electrician maintains shop electrical installations and reports to the power plant operator.

(5) Privates, storekeeper, locomotive inspectors, and basic.

b. Locomotive repair section No. 1.—Operates shop and terminal facilities during the day shift, performs the major part of repair work, and does all engine painting.

(1) Staff sergeant, assistant engine house foreman and section leader, is responsible for operation of the shop, for repairs to locomotives, and for operation of locomotive cranes during his shift. He reports to and receives instructions from the platoon commander.

(2) Sergeant, assistant engine house foreman and principal assistant of section leader, is responsible for operation of shop machinery.

(3) Corporal, foreman, mechanic, maintains power machinery of shop other than electrical.

(4) *Privates*.—The designation, locomotive repair section, indicates type of work on which these men are normally employed. There are blacksmiths, carpenter, electrician, air brake mechanic, firemen, pipe fitter, hostler, boilermakers, oilers, crane operators, mechanics, welder, and basic. Distribution of personnel on tasks depends upon roundhouse facilities and work upon which engaged. It operates shop machinery, repairs and cleans locomotives, washes boilers, prepares fires in locomotives leaving the shop, and operates coaling and ash facilities.

c. Locomotive repair section Nos. 2 and 3.—(1) These two sections are organized alike to operate running repair shop during second and third shifts. The platoon commander may upon approval of the master mechanic combine repair sections Nos. 2 and 3 with repair section No. 1. Only sufficient personnel need remain in the second and third shifts to permit operation of locomotive cranes, care of shop equipment, receipt and dispatch of locomotives, and such other work as is deemed necessary.

(2) Each section is composed of staff sergeant, assistant engine house foreman; sergeant, engine house foreman; corporal, foreman; and various privates. Privates include an electrician, air brake mechanic, firemen, pipe fitter, hostler, mechanics, boilermakers, oilers, crane operator, welder, gas engine mechanic, general mechanic, and basic.

SECTION VI

TRANSPORTATION COMPANY

| | |
|-------------------------|--------------|
| Organization | Paragraph 29 |
| Function | 30 |
| Company headquarters | 31 |
| Train operating platoon | 32 |

29. Organization (fig. 3).—Organization of the transportation company is designed to provide flexibility required to operate a relatively small number of heavy trains in rear areas, a relatively large number of light trains in forward areas, to provide switching operations at terminals, or any combination of these duties. It is normally organized with a company headquarters and two train operating platoons (see T/O 5-129). It may be organized with only one or with more than two train operating platoons as conditions require.

30. Function.—*a.* Operates trains, yards, and stations within territorial limits of the railway division. Chief responsibility is expeditious handling of traffic. Every effort must be made to deliver freight and troops at their destinations at the time they are required. Initiative and ingenuity must be developed to insure a constant flow of supplies to troops in spite of physical difficulties.

b. The number of trains which may be operated in 24 hours depends upon the length of the line, condition of track and equipment, number and location of passing tracks, nearness to front, etc. For the purpose of planning it may be assumed that the operating platoon has sufficient personnel to operate 20 trains in each direction in 24 hours. The company, therefore, can operate 40 trains in 24 hours (20 in each direction). This makes no provision for switching operations. Twenty-five train crews are provided in each operating platoon but the number of trains which can be operated normally must be reduced below 25 in order to permit periodic rest and to take care of sickness.

31. Company headquarters.—Provides personnel for supervision, inspection, and administration of the company and for yard and station operation of the railway division. Minor stations are normally in charge of a sergeant station agent (see *e* (3) below). Railway traffic officers who are members of the staff of the general superintendent may be assigned to the superintendent, and will be located at important railway stations in addition to the station agents to expedite movement of troops and supplies. The railway traffic officer represents the superintendent of the railway division in which he is located and is in charge of all railway troops at his station.

a. Captain, commanding the company, is trainmaster for the railway division. He is responsible for discipline, training, messing, housing, and general care of his men, and for operation of trains, yards, and stations. He sees that prescribed rules and regulations are complied with. In the absence of instruction from higher authority, he prescribes such rules and regulations as may be required in the interest of safe and efficient operation. He sees that no unnecessary trains are run, and that trains move promptly and regularly over the division. He investigates train delays and accidents, inspects condition of equipment and stations, supervises loading and unloading of cars, and sees that cars are used to the fullest extent. He cooperates with the train movement section of headquarters and service company, and makes such recommendations relating to train movements as may improve operating conditions.

b. Second lieutenant, yardmaster, reports to the trainmaster. He has charge of making up trains and distribution of cars in the yards. He is responsible that train operating platoon receives early information concerning train movements so that crews will be available. He sees that cars are properly placed for loading and unloading and that all cars needing repairs are sent to repair tracks or to the shop. He keeps such records and submits such reports as may be required by higher authority or may be necessary in the interest of efficient operation.

c. First sergeant.—See paragraph 21*c* for details.

d. Staff sergeants.—Assistant trainmaster is responsible for car records and reports. He is assisted by one clerk. Additional clerical help may be assigned to him from the basic privates. An assistant yardmaster is provided for each shift to provide 24-hour yard operation. Each assistant yardmaster is responsible for make-up of trains, switching and placing of cars in his yard during his shift, and for personnel engaged upon these activities.

e. Sergeants.—(1) Supply sergeant is charged with receipt and issue of supplies and equipment. He keeps in touch with supply requirements of the company and prepares requisitions. He has storekeepers and chauffeurs as assistants. The trucks are under his direction.

(2) Mess sergeant is responsible for receipt, preparation, and distribution of rations of the company. He has the cooks and helpers under his direction. He makes suitable arrangements with mess section of headquarters and service company or other company for feeding company personnel when on duty which will not permit them to be rationed with the company.

(3) Station agents are assigned to duty at station locations in the divisional territory. A station agent is the representative of the railroad at the station. He is responsible for condition and protection of the station, for prompt placing of cars for loading and unloading, and for their subsequent movement. He posts official notices and timetables in his station. He sees that cars are properly loaded and seals them for shipment. When cars are received, he promptly notifies the organization or person to whom they are billed, or the individual responsible for unloading at the station. Station agents are responsible for issue of tickets, for custody of station records, and for preparation and forwarding of station reports.

(4) Assistant yardmaster reports to the yardmaster, or may be employed as additional station agent or on other duty.

f. Corporals.—(1) Company clerk assists the first sergeant in care and preparation of records of the company.

(2) Yard conductors report to and receive instructions from the assistant yardmaster in charge of the yard in which they operate. A yard conductor is in command of a switching crew drawn from the operating platoon. Road conductors from the train operating platoon may be assigned to yard operation as required.

g. Privates.—Cooks and helpers report to mess sergeant. Bugler reports to first sergeant. Chauffeurs and storekeepers report to supply sergeant. Switchmen and one clerk report to yardmaster or his assistant; one clerk to first sergeant. Basic privates report to first sergeant for assignment to duties. The orderly is assigned as needed.

32. Train operating platoon.—This platoon is composed of headquarters and 25 train crews and is charged with operation of trains between terminals and switching operations as required.

a. Platoon headquarters.—Supervises, dispatches, and inspects train crews.

(1) First lieutenant, platoon commander and traveling engineer or road foreman of engines, reports to and receives instructions from the trainmaster and cooperates with the master mechanic to insure proper mechanical condition of motive power. He has authority over train crews. He frequently rides upon engines and instructs engineers and firemen in their duties. He takes measures to avoid engine failures and delays. He reports any deficiency in water and fuel to the trainmaster. He informs the trainmaster and master mechanic of condition of engines leaving the shop for service.

(2) Staff sergeant, yard foreman, performs such duties as may be delegated to him by the platoon commander. He normally handles administrative matters, keeps platoon records, and supervises dispatch of crews. He is assisted by the sergeant crew dispatcher.

(3) Sergeant, crew dispatcher, is responsible for the crew roster and sees that crews report promptly for service. He reports to and receives instructions from the yard foreman.

(4) Privates, basic, are assigned to duties by the yard foreman.

b. Train crew.—Operates either a freight or a passenger train or performs switching operations.

(1) Corporal, train conductor, is responsible for prompt movement of freight and passengers to their destination, and for safety and condition of train en route. He is governed by rules and regulations prescribed for operation of trains.

(2) Privates, brakemen, engineer, and fireman. The brakemen report directly to the conductor. The engineer reports to the con-

ductor and is responsible for mechanical condition of the locomotive, for observance of rules and regulations applicable to it, and for prompt and efficient discharge of duty by the fireman.

SECTION VII

DRILL AND CEREMONIES

| | Paragraph |
|---|-----------|
| General..... | 33 |
| Battalion staff..... | 34 |
| Color guard and guidon..... | 35 |
| Rules relating to men armed with pistols..... | 36 |
| Drill organization..... | 37 |
| Close-order drill..... | 38 |
| Formations..... | 39 |
| Inspection..... | 40 |
| Ceremonies..... | 41 |
| Extended order..... | 42 |

33. General.—*a.* Units of the railway operating battalion are organized for work and not for drill and combat. The company as a unit does not in general engage in prescribed drills. Such drill as is conducted is normally executed by the platoon. It practices close-order drill to the extent necessary to prepare for participation in ceremonies and marches.

b. Organization of companies of the battalion as given in Tables of Organization shows personnel as grouped while engaged upon railway work. This organization is adaptable to drill, ceremonies,

e. Fundamentals of drill, ceremonies, inspections, and combat prescribed herein (fig. 4).

c. Companies are assembled and inspected in these formations.

d. Noncommissioned officers will be assigned to duty as platoon leaders, platoon sergeants, platoon guides, squad leaders, and second in command of squads.

e. Fundamentals of drill, ceremonies, inspections, and combat prescribed in FM 22-5 for the infantry rifle company and infantry battalion are applicable to units of the railway operating battalion with such changes as are specified herein or are required due to difference of organization or arm.

34. Battalion staff.—*a.* The battalion commander's staff for ceremonies consists of second in command (assistant division superintendent), adjutant, and battalion surgeon.

b. Enlisted personnel of the battalion commander's staff consists of master sergeant, dispatcher, and one private from headquarters and service company.

RAILWAY OPERATING BATTALION

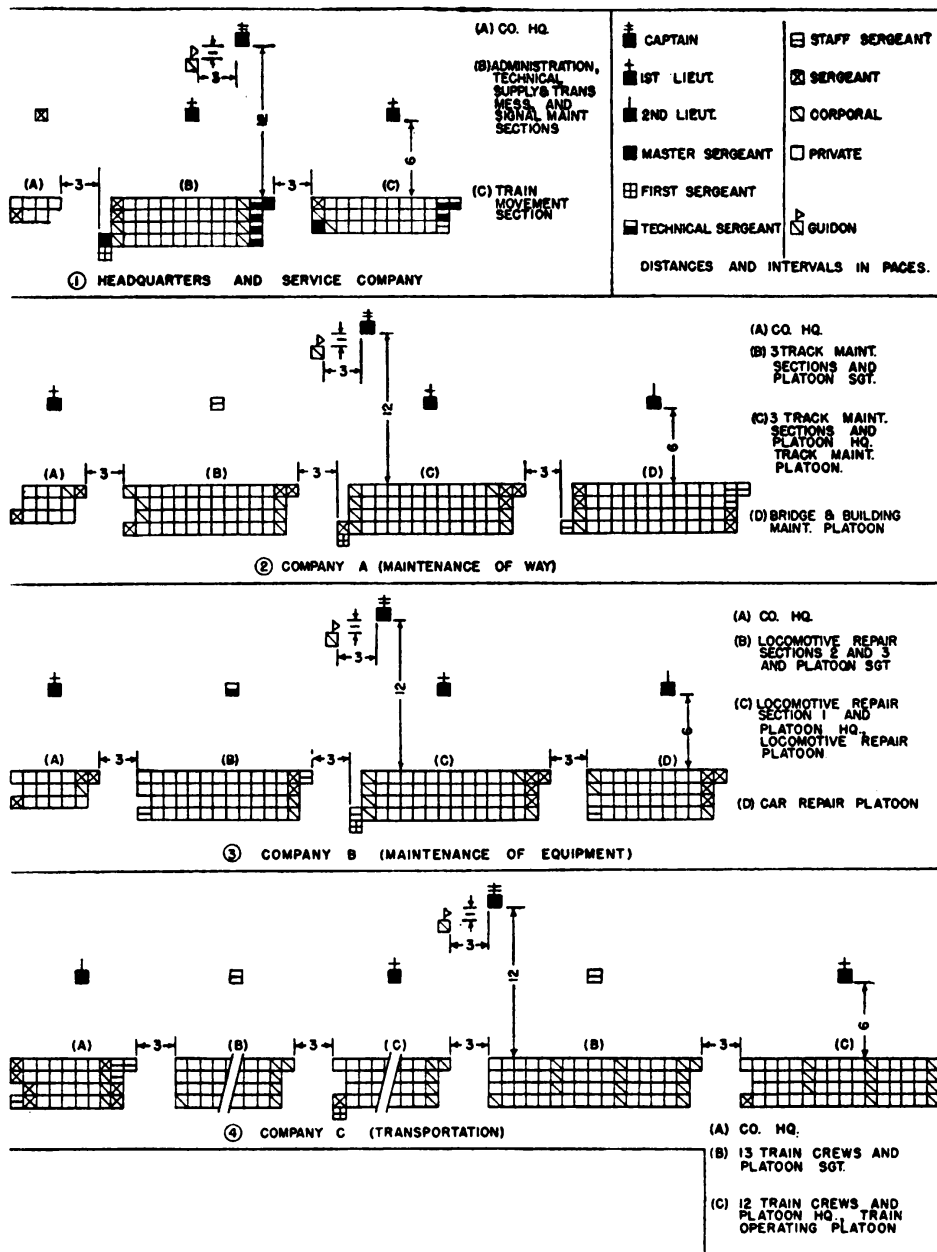


FIGURE 4.—Drill and assembly formations, railway operating battalion.

c. Arrangement of members of the battalion staff is in accordance with provisions of FM 22-5.

35. Color guard and guidon.—a. *Color guard.*—(1) Color guard consists of the battalion sergeant major who is the battalion color bearer, and two privates selected by the battalion commander, usually from headquarters and service company.

(2) Regulations governing the color are contained in paragraph 98, FM 22-5.

(3) The maintenance of way company is the color company.

(4) At drills and ceremonies in which the color is to participate except escort to the color, the color is received by the color company prior to formation of the battalion as described in paragraph 98*f*, FM 22-5. The various positions of the color are shown in figure 5.

b. Guidon.—(1) The guidon is carried according to the fundamentals prescribed in FM 22-5. The company clerk normally carries the guidon.

(2) Position of the guidon in various company formations is shown in Figure 4.

36. Rules relating to men armed with pistols.—*a.* Officers and enlisted men armed with the pistol or revolver in units containing both rifles and pistols remain at the position of the soldier without arms during execution of the manual of arms except when their units are brought to the present arms as a part of a ceremony such as—

(1) Ceremonies described in chapter 9, FM 22-5.

(2) Presentation of an organization to its commander at retreat.

(3) Guard mounting.

b. Under conditions set forth in *a* above, officers and enlisted men armed with the pistol execute the first motion of the hand salute at the command **ARMS**, and the second motion of the hand salute at the command of execution of the next command.

c. In a unit composed entirely of men armed with the pistol the commands for rendering the salute prescribed above are 1. **BY THE NUMBERS**, 2. **HAND**, 3. **SALUTE**, 4. **TWO**.

37. Drill organization.—*a. Platoon.*—(1) The drill platoon is composed of a platoon headquarters and two, three, or more squads.

(2) Platoon command group comprises platoon commander, platoon sergeant (second in command), platoon guide, and one runner.

(3) The platoon commander may be an officer or noncommissioned officer.

b. Company.—The company is composed of a company headquarters and two or more drill platoons. The company command group consists of the company commander, one other officer (if available), the first sergeant, and the guidon. Personnel of company headquarters is formed as or attached to a drill platoon.

c. Battalion.—The battalion is composed of three lettered companies and headquarters and service company. Units of the battalion

RAILWAY OPERATING BATTALION

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37

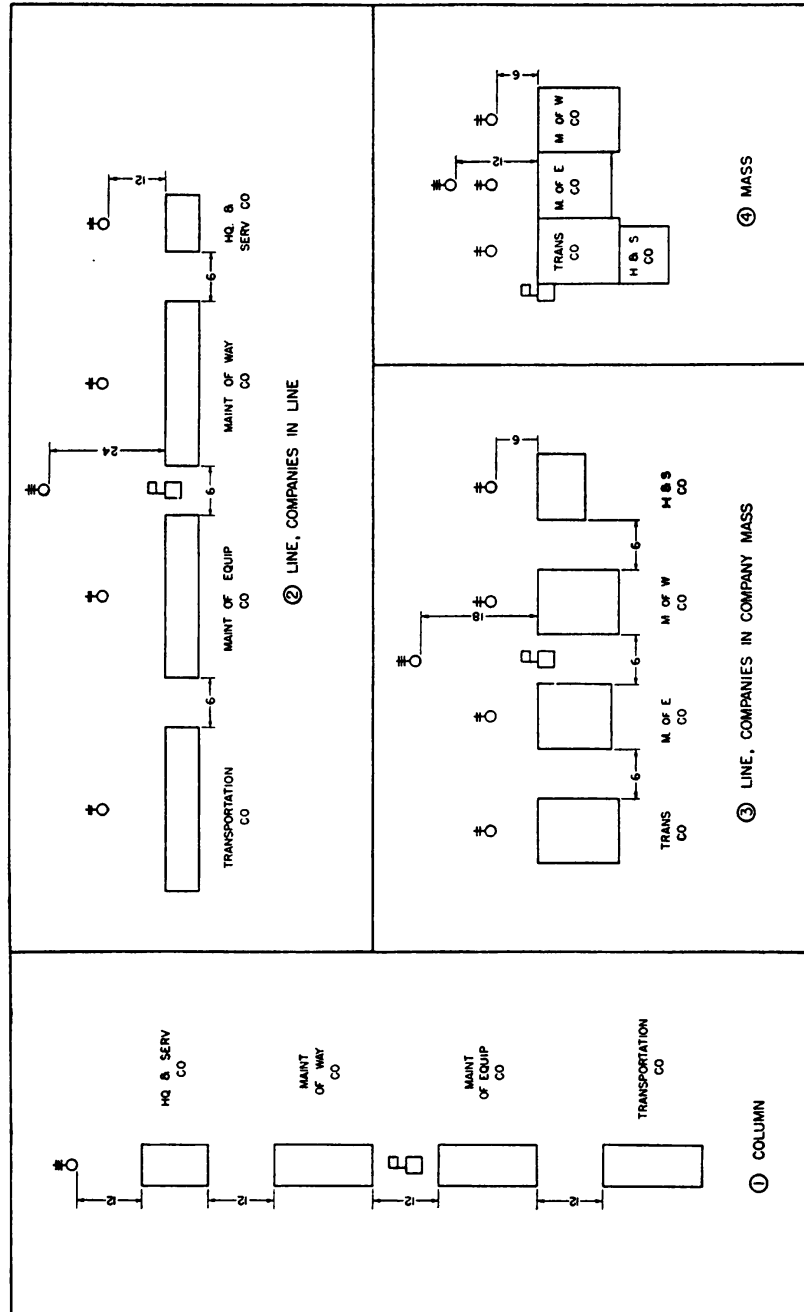


FIGURE 5.—Battalion formations.

are arranged in the following order from front to rear or from right to left: Headquarters and service company, maintenance-of-way company, maintenance-of-equipment company, transportation company, and medical detachment.

38. Close-order drill.—*a. Soldier.*—(1) All personnel of the battalion receive the individual instruction of a soldier dismounted without arms (FM 22-5).

(2) Personnel of companies whose basic arm is the rifle will receive instruction of a soldier dismounted with rifle (FM 22-5).

(3) Personnel of companies whose basic arm is the pistol will receive instruction in the soldier dismounted with pistol (FM 22-5).

b. Squad.—Squad drill is carried out as prescribed for the infantry rifle squad (FM 22-5).

c. Drill platoon.—The platoon is drilled as an infantry rifle platoon (FM 22-5). The platoon is the largest unit engaged regularly in drill or extended order. Formations of the platoon are similar to those of the infantry rifle platoon and include line and column of fours, threes, twos, or files.

d. Company.—The company drills as an infantry rifle company. The purpose of close-order drill of the company is to permit it to participate in ceremonies. Knowledge of movements, commands for which are described in chapter 9, FM 22-5, is required. Formations of the company are line, company mass, column of threes or fours.

e. Battalion.—The battalion does not engage in close-order drill.

39. Formations.—*a. General.*—Formations employed are—

(1) *Drill and assembly*, used for reveille, retreat, roll call, inspection, and close- or extended-order drill. It is used habitually on company parade and normally precedes formation for drill or ceremonies.

(2) *Route march*, used on the road.

(3) *Inspection* used for careful check of personnel, for detailed inspection of personnel, equipment, and motor transport.

b. Drill and assembly.—Elements of the company are arranged from right to left as shown in figure 4. The various elements form under their leaders. Company headquarters is always on the left. To form the company, see paragraph 14a, FM 22-5.

c. Route march.—(1) For route march companies take up the march formation shown in figure 35, FM 22-5. The chauffeurs for company trucks, mess sergeant, supply sergeant, cooks, and helpers join the company or battalion vehicles. When the company acts alone it calls upon the headquarters and service company for an additional truck and one motorcycle with chauffeurs. When entire battalion takes up the march, the company truck and mess sergeant, supply sergeant, and

cooks and helpers join headquarters and service company. The transport section of headquarters and service company increased by the company trucks is placed under command of an officer designated by the company commander, headquarters and service company. Individuals of companies designated above with such additional personnel as may be designated by proper authority are assigned to vehicles by the transport section commander.

(2) The march is governed by regulations applicable to the infantry rifle company and the infantry battalion with such modifications as are necessary due to difference in organization.

(3) Order of march of the battalion is prescribed by the battalion commander.

40. Inspection.—*a. Types.*—The two types of inspection are—

(1) *Military*, made for the purpose of determining condition of personnel, individual equipment, quarters and arms of the organization, and carried on in accordance with provisions of section IV, chapter 9, FM 22-5.

(2) *Technical*, made for the purpose of improving efficiency of the unit and the individual on railway work, and to insure safe operation. It includes inspection of facilities, of technical qualifications of individuals, of work, and of equipment and material other than individual.

b. When made.—(1) When personnel is not engaged upon railway work, inspections normally are held in the company area. The company is usually formed for inspection as shown in figure 4.

(2) When personnel of the battalion is engaged upon railway work, military inspection is not made at a time or in a way which interferes with maintenance and operation. When made, the formation is prescribed by the local commander, following the general principle that personnel is placed under its work leader and that groups engaged upon different types of work are separated.

(3) Technical inspections are made continuously by unit commanders to maintain the efficiency of their organizations while operating. Methods of making technical inspection are prescribed by the battalion commander in such a way as not to interfere with essential work.

41. Ceremonies.—*a.* Rules governing participation of the battalion in ceremonies are prescribed in FM 22-5.

b. Relative positions of the several units of the battalion are shown in figure 5.

c. Organizations habitually pass in review in company mass formation or column or columns of threes or fours.

42. Extended order.—*a.* For general regulations governing extended order, see chapter 10, FM 22-5.

b. Extended order is executed by units whose basic arm is the rifle. Headquarters and service company and transportation company do not receive training in extended order.

c. The platoon is the largest unit which executes extended order.

d. The engineer squad executes extended order as an infantry rifle squad.

e. The drill platoon executes extended order as an infantry rifle platoon.

f. The company as a unit does not execute extended order. Personnel of company headquarters with exception of mess and supply sergeants, company clerk, chauffeurs, and cooks and helpers are attached to platoons from time to time for instruction in mechanics of extended order, as these men may be utilized under certain conditions to augment the platoon when employed in combat.

SECTION VIII

COMBAT

| | Paragraph |
|---|-----------|
| General..... | 43 |
| Squad..... | 44 |
| Platoon..... | 45 |
| Company..... | 46 |
| Battalion..... | 47 |
| Headquarters, and headquarters and service company..... | 48 |

43. General (FM 5-5).—*a.* Railway troops will be used in combat only under the most extraordinary conditions. When the battalion is operating over an area which may be subject to combat, it is normally protected by troops from other arms of the service. When combat does occur in the vicinity of the railway, railway activities may increase either in tonnage, troop movements, or action to save equipment or destroy structures. Railway troops may have to engage hostile aviation, mechanized raiding parties, and parachute troops.

b. When it is necessary for the railway operating battalion to engage in combat, it is organized into a battalion of two rifle companies and one headquarters and service company.

c. The transportation company (armed with pistol) is held responsible for care and protection of all railway equipment and material not used by the battalion in combat and furnishes replacements to the other companies.

d. All trucks in the battalion (except the transportation company truck) are placed under direction of the commanding officer, headquarters and service company.

e. Organization of rifle companies for combat is shown in figure 4.

f. The headquarters and service company in combat is composed of company headquarters, communications platoon, intelligence platoon, supply and transportation platoon, and administration platoon.

g. The battalion is not qualified by training, equipment, transportation, or armament to make a sustained effort. Its mobility is limited by type and amount of its transportation. Due to these limitations the battalion will be used in defense rather than offense.

44. Squad.—*a.* The engineer rifle squad operates in combat in general as an infantry rifle squad (FM 22-5).

b. The squad may be armed with semiautomatic rifles. It is not equipped with portable intrenching tools. Its total effective rifle strength varies.

45. Platoon.—*a.* The rifle platoon operates in combat in general as an infantry rifle platoon of two, three, or four squads. Platoon headquarters consists of platoon commander, platoon sergeant, and three runners.

b. The platoon deployed in two lines occupies about 70 yards.

c. The platoon deployed in one line occupies about 140 yards.

d. The engineer platoon may be armed with semiautomatic rifles, does not carry portable intrenching tools, and cannot obtain machine-gun or infantry weapon assistance from its own battalion. It does not receive training in use of hand grenades. Due to lack of training in teamwork it cannot be expected to cooperate as effectively as Infantry with other arms in combat.

46. Company.—*a. General.*—The engineer rifle company when employed in combat operates in general accordance with fundamentals prescribed in FM 22-5 for the infantry rifle company. It enters into combat with a company headquarters and three or four platoons. It has the same deficiencies in regard to armament and training as has the platoon.

b. Echelons.—The company is divided into a forward and a rear echelon. The forward echelon consists of the command group of the company headquarters and the platoons. The rear echelon consists of the administration and supply group of company headquarters. In preparation for combat, the company commander causes ammunition to be issued and designates the personnel to serve with forward and rear echelons.

(1) *Forward echelon.*—(a) *Command group.*—The command group directs and controls the operations of the company and maintains communications within the company and with higher and adjacent units. Minimum personnel of the company group consists of—

1. Company commander who directs and controls action of the company.
2. First sergeant who assists the company commander by performance of any duties which the latter may assign him.
3. One noncommissioned officer who supervises functioning of the command group, receives and dispatches messages, and records same.
4. Company bugler who acts as messenger and observer.
5. Seven runners who maintain communication with platoons and with higher and adjacent units. Runners may be privates or noncommissioned officers. This number may be increased by detail of men from the operating company or the headquarters and service company. During combat the command group is augmented by runners from units supporting the company who maintain communication between the company command post and their respective units.

(b) *Platoons.*

(2) *Rear echelon.*—The administration and supply group is charged with procuring, preparing, and issuing rations, securing and issuing supplies and ammunition, and carrying on routine administrative matters. The rear echelon consists of the officer from company headquarters, mess and supply sergeants, company clerk, cooks and helpers, chauffeurs, and basic privates who assist in forwarding food and ammunition, caring for supplies, carrying messages, and operating the company trucks which form part of the rear echelon.

c. *Employment.*—The company normally deploys with two platoons in the assault echelon and one or two platoons in the support echelon. It may deploy with three platoons in the assault echelon and one platoon in support echelon; or two platoons in the assault echelon, one platoon in the support echelon, and one platoon in the battalion reserve. Ordinarily a platoon is made responsible for a front from 85 to 170 yards. It does not necessarily cover this frontage with a continuous line but operates in squad groups and covers the unoccupied frontage with fire, observation, and patrols.

d. *Combat power.*—Due to deficiencies in training and armament the company may be considered as having about one-half the combat power of an infantry rifle company.

47. Battalion.—a. General.—(1) The battalion when employed as a unit in combat operates under the fundamentals prescribed in FM 7-5, with modifications made necessary by difference in organization. There are no heavy weapons in the battalion.

(2) The battalion enters into combat with two rifle companies and a headquarters and service company. It is divided into a forward echelon and a rear echelon.

(3) In preparation for combat, the battalion commander details men from the transportation company to the other companies of the battalion, designates the point where equipment not used in combat will be placed, assigns the task or tasks to the transportation company, and arranges for supply of additional ammunition.

b. Echelons.—(1) *Forward echelon.*—The command group operates the battalion command post, directs and controls operations of the battalion, and maintains communication with the companies and adjacent units. It consists of the battalion commander, second in command, chief dispatcher who acts as plans and training officer, signal supervisor who acts as intelligence and communications officer, and three motorcyclists. Personnel for the intelligence and communications platoon is drawn from the train movement section and the signal maintenance section. It operates the command post and message center, receives, transmits, and records messages, operates motorcycles, examines prisoners, provides observers, runners, scouts, and liaison; receives, prepares, verifies, and distributes intelligence maps. The strength of the platoon is approximately 35 men. Companies are organized for combat as prescribed in paragraph 46.

(2) *Rear echelon.*—The rear echelon consists of the rear echelons of the companies and the company headquarters and the supply platoon of the headquarters and service company. The number of men to remain with the rear echelon is decided by the battalion commander. The battalion adjutant and the battalion supply officer are normally with the rear echelon.

d. Employment.—The rifle companies of the battalion may be deployed in column or abreast. In the latter case, the battalion may or may not hold out reserves, depending on the situation. The normal battalion reserve when companies are deployed abreast is one platoon per company.

e. Combat power.—The combat power of the battalion may be considered equivalent to one infantry rifle company.

48. Headquarters and headquarters and service company.—

a. For combat the headquarters and service company is organized into a company headquarters, a supply and transportation platoon,

an intelligence and communications platoon, and an administrative section. All elements of the company are in the second echelon except the intelligence and communications platoon.

b. The company headquarters provides for administration, supply, and interior economy of the company.

c. The intelligence and communications platoon operates the forward echelon of the battalion command post. It is provided with three motorcycles.

d. The supply and transportation platoon operates the motor vehicles not assigned to companies or to the intelligence and communications platoon, and maintains rations, ammunition, and other supplies.

e. The administrative section reports to the battalion adjutant and consists of the personnel force and the mail force. It supervises work of the company clerks.

f. Strengths of the various units of the company are determined by the battalion commander.

g. Additional men may be attached to the company from the transportation company if the situation requires it.

SECTION IX

TRAINING

| | Paragraph |
|------------------------------|-----------|
| General..... | 49 |
| Private..... | 50 |
| Noncommissioned officer..... | 51 |
| Commissioned officer..... | 52 |
| Unit..... | 53 |
| Method..... | 54 |

49. General.—*a.* The battalion must undertake disciplinary, physical, combat, and technical training (FM 5-5).

b. The purpose of disciplinary training is to develop the habit of obedience, to permit participation in ceremonies and inspections, to promote teamwork and morale within the organization, and to develop leadership.

c. The purpose of physical training is to develop the bodies of the individuals so as to enable the organization to accomplish the arduous tasks which it is required to perform in the theater of operations without unduly depleting its strength by sickness. Physical training is included in training programs by unit commanders and includes games as well as calisthenics (FM 21-20).

d. The purpose of combat training is to enable participation in defensive combat and to provide for security.

e. Technical training is all training undertaken for the purpose of qualifying individuals and units in performance of duties relating to maintenance and operation of railways.

50. Private.—The individual soldier must be trained—

a. In military courtesy and discipline, including the basic training of the soldier, guard duty, first-aid, and hygiene.

b. To use the weapon with which armed.

c. To perform duties to which assigned.

d. To execute movements of close order and extended order.

e. In combat principles.

f. In scouting and patrolling.

51. Noncommissioned officer.—*a.* In addition to the training prescribed for the private, the noncommissioned officer is trained in command.

b. Railway operating battalions are mobile units. They must be able to take over immediately the operation and maintenance of a railway. The nature of duties assigned to them requires dispersion of personnel in small detachments over a large area. They are subject to constantly varying conditions due to fluctuations in tonnage, accidents, and enemy destructive activities. In order to insure prompt and efficient execution of work, responsibility must be delegated to noncommissioned officers. For the reasons given above, it is impracticable for officers to exercise direct control of work; they can only supervise its execution. Emphasis in training of noncommissioned officers must be placed upon development of leadership, initiative, and a sense of responsibility. The military effectiveness of a railway organization depends primarily upon ability of noncommissioned officers to assume responsibility.

52. Commissioned officer.—A unit commander must be trained—

a. In the relation between his unit and other units of the battalion.

b. In powers and limitations of the unit he commands.

c. In means and methods employed in execution of work.

d. To utilize existing subordinate units under their leaders for execution of work.

e. To supervise the work; that is, see that tasks are properly carried out, that correct methods are used, and that supply of materials is maintained.

f. To plan for improvement of activity over which he exercises control.

g. To plan for various conditions under which he may have to operate, bearing in mind that command responsibility should so far as practicable remain the same.

53. Unit.—A unit must be trained in—

a. Railway work, to execute rapidly and systematically engineer work which may be assigned to it in maintenance and operation of railways.

b. Close- and extended-order drill.

c. Combat principles.

54. Method.—*a.* The method adopted should create a flexible organization capable of operating under varying conditions with maximum speed and efficiency. To attain this end, emphasis must be placed upon disciplinary and command training of groups under their leaders.

b. In order to create a smooth-running organization, the individuals therein must be soldiers and engineers, and they must be trained to operate as a unit or group.

c. When the unit is not employed on technical work, that is, during mobilization or in rest camps, training is concentrated on—

(1) Military training; duties of the soldier; drill, ceremonies, inspections, combat exercises, and marksmanship.

(2) Care and use of tools assigned to the unit.

(3) Rules and regulations governing safety and train movements.

d. When the unit is employed on railway work, training emphasis is placed upon development of specialists qualified to perform the work and operate the machines of the unit. This type of training is continuous and is carried on by the apprentice system used on civil railways. It should not interfere with maintenance and operation of the railway.

e. Individual training should in general be conducted by non-commissioned officers. In order to train instructors and certain specialists, schools may be conducted within the battalion. Officers prepare training programs, supervise their execution, and train instructors and certain specialists.

SECTION X

MEDICAL DETACHMENT

| | |
|------------------------------------|--------------|
| General..... | Paragraph 55 |
| Drill, ceremonies, and combat..... | 56 |

55. General.—*a.* The medical detachment must be a flexible organization capable of meeting the varying conditions under which it operates. Distribution of personnel and duties will change with the employment of the battalion.

b. The detachment must be able to furnish adequate medical aid whether the battalion be operating a railway, engaged in combat,

or in a rest camp. When operating a railway the battalion is scattered over a considerable area, varying in length from 50 to 100 miles. The detachment must take care of the usual sickness, shop and line accidents. If it is impracticable to take care of isolated detachments, the battalion surgeon will arrange with other nearby medical agencies for such service.

c. The battalion commander designates the location of the battalion dispensary or aid station and local aid posts, if necessary, upon recommendation of the battalion surgeon. On railway work the principal aid points normally will be near the shops.

d. Personnel of the medical detachment must be available at all times to proceed on short notice to the site of a wreck and furnish medical aid.

56. Drill, ceremonies, and combat.—The detachment is handled in accordance with the principles set forth in FM 8-5 (now published as the TR 405-series), with such modifications as may be necessary due to its difference in strength, organization, and employment.

[A. G. 062.11 (7-29-40).]

BY ORDER OF THE SECRETARY OF WAR:

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Chief of Staff.

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The Adjutant General.

